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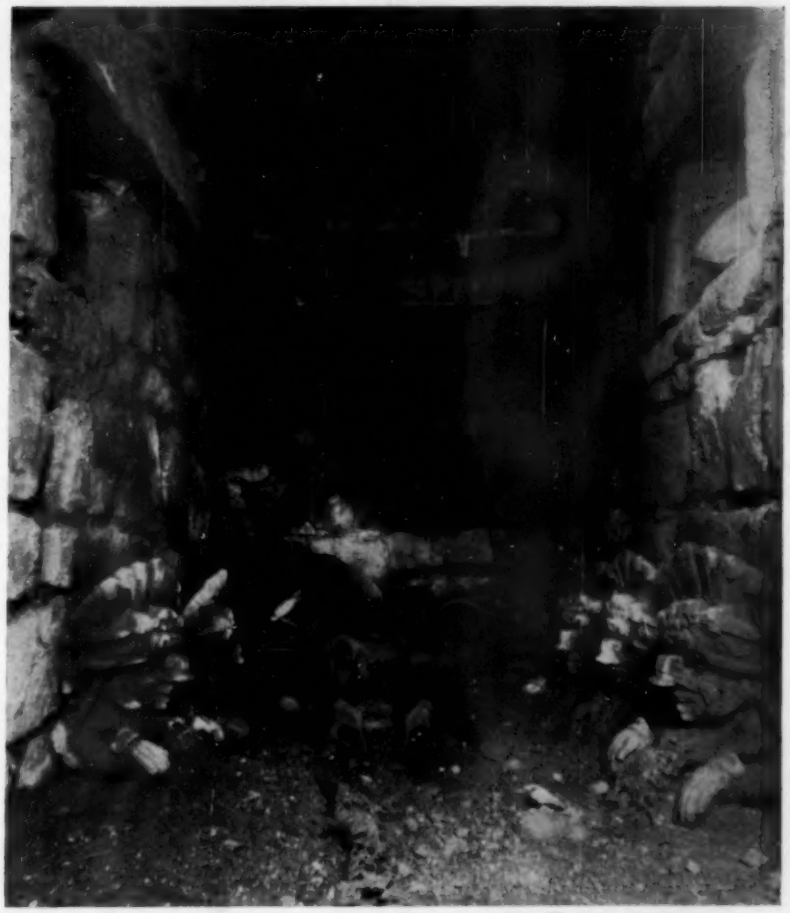
# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



JUNE 9, 1934

**Strange Resting Place**

See Page 362

A SCIENCE SERVICE PUBLICATION

# SCIENCE NEWS LETTER

*VOL. XXV* *No. 687*

The Weekly Summary of Current Science

*Published by*

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The Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

*Edited by* WATSON DAVIS

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# DO YOU KNOW?

It is estimated that there are 2,300,000 stones in the Great Pyramid.

Dried apples made by a new process are comparable in flavor to fresh apples.

Indian farmers grew all three kinds of summer squashes—the crooknecks, scallops, and vegetable marrows.

How plants obtain their vitamins is being studied with hundreds of generations of duckweed, at Iowa State College.

When the most recent ice age was at its height there were 12,000,000 square miles of ice on earth; now there are only 6,000,000, most of that in the Antarctic.

Forsythia flowers are comparatively new in western lands, having been brought from Japan to Holland first about a century ago.

A new kind of maple sugar block is said not to become hard or mottled.

A new machine removes the bark neatly from such hardwoods as beech and maple.

Experimental efforts to raise silkworms in French Africa are reported to be making satisfactory progress.

The earth's core is 1,800 miles below the surface, is the estimate on the basis of earthquake wave travel time data.

A new steel welding process is said to produce steel pipe that is stronger and more lasting than that produced by present equipment.

A physical and chemical laboratory recently constructed in England is made of reinforced concrete, even to the cupboards and desks.

# WITH THE SCIENCES THIS WEEK

AGRICULTURE

How do animals get selenium poisoning? p. 361.

ANTHROPOLOGY

Where is the orang-utan's "cowlick"? p. 363.

ARCHAEOLOGY

Did Mayan engineers know the principle of the true arch? p. 365.

How does the Government plan to aid research? p. 361.

What Mexican god was a water carrier? p. 362.

ASTRONOMY

What would enable city dwellers to enjoy the stars? p. 366.

AVIATION

How much flying time can be saved by choosing the best flight path? p. 362.

ENGINEERING

For what purpose are heat and extreme cold both used? p. 360.

ENTOMOLOGY

What is the longest lived of insects? p. 359. *Fundamentals of Insect Life—C. L. Metcalf and W. P. Flint—McGraw-Hill,* 1932, $4.

EUGENICS

Does a depression lower the marriage rate of college women? p. 360.

GENERAL SCIENCE

What do scientists hope for from an applied science of psychology? p. 356. *Science and Human Life—J. B. S. Haldane—Harper,* 1933, $2.50.

MEDICINE

How can kidney secretion retard cancer in animals? p. 363.

How is the disease "brain stones" diagnosed? p. 361.

What is atabrine? p. 360.

MEDICINE—PSYCHIATRY

Can fright cause nausea? p. 360.

NATIONAL PARKS

What strange Indian tribe lives near America's newest national park? p. 365. *Book of the National Parks—R. S. Yard—Scribner's,* 1928, $3.

PHYSICS

Who first suggested the use of pressure tube anemometers? p. 359.

Why is the study of sound important to those determining the wavelengths of radio stations? p. 360. *The Science of Musical Sounds—D. C. Miller—Macmillan,* 1926, $2.50.

PHYSIOLOGY

What is the best temperature for the serving of beer? p. 362.

PSYCHIATRY

What fault is more common among children of large families? p. 361.

What should you do when you have a serious worry? p. 364. *Bodily Changes in Pain, Hunger, Fear and Rage—W. B. Cannon—Appleton,* 1929, $3.

When should ogre stories not be told? p. 367.

Why do men shave? p. 364.

PSYCHIATRY—PHYSIOLOGY

What are the symptoms of oxygen lack? p. 355.

PSYCHOLOGY

How do Orientals picture receding parallel lines? p. 355.

What causes a dream of danger to life? p. 361.

What condition makes the moron unstable? p. 367.

RADIO

What causes high power stations on different wavelengths to interfere? p. 363.

ZOOLOGY—MEDICINE

Do cats like cream? p. 359.

***These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the references for further reading. Books cited can be supplied at Book Department, Science News Letter, at publishers' prices, postpaid in the United States.***

PSYCHIATRY—PHYSIOLOGY

# New Reducing Drugs Promise Aid in Fighting Mental Ills

## Medicines, Which Cause Patient to Use Oxygen Faster, Improve Condition of Schizophrenics

TWO new and potent reducing medicines may prove to be the means of bringing certain mental disease patients back from their dream world to the real world of sanity. This possibility is indicated by a report by Drs. J. M. Looney and Roy G. Hoskins of Boston, presented before the American Psychiatric Association.

The medicines have the long chemical names of dinitro-phenol and dinitro-ortho-cresol. They cause patients to lose weight by making their body fires burn faster, using excess body fat as fuel and burning it off.

The process requires the patients to use up more oxygen, and it is this feature that suggested the use of the drugs for the treatment of the mental disease known as schizophrenia.

### Unwaking Sleep-Walkers

This mental ailment has been compared to a dream state, the patients resembling sleep-walkers who do not awaken. Not only are their minds in a dream state but the physiological processes of their bodies are slowed up, somewhat as they are slowed up in normal persons during sleep.

Dr. Hoskins had found previously, among other things, that such patients use less oxygen during their waking hours than do normal persons. Whether this decreased consumption of oxygen is a cause of the disease is not known; but it is significant that when normal persons are deprived of oxygen, they develop certain symptoms seen in schizophrenia. These symptoms include defective judgment, slowness of perception, inattentiveness, silly laughter, anger without adequate cause, destructiveness, mental confusion and even hallucinations and delusions. All these symptoms, characteristic of schizophrenia, have appeared in normal persons whose oxygen consumption was reduced.

Following this lead, Drs. Looney and Hoskins gave the new reducing medicines to ten schizophrenic patients. Two of them improved during the treatment, but not enough time has elapsed to show whether the improvement will be lasting and actually due to the influence of the drugs.

However, since no significant harmful effects have been observed, the Boston investigators feel justified in continuing the treatment long enough to determine its worth.

The fact that no harmful results followed the treatment with these medicines is important, because they are so powerful that if they are not given in proper doses they may produce serious results. Deaths have followed their use by persons who took them without a physician's guidance.

One of the medicines, dinitro-ortho-cresol, turned the patients' skins yellow after a time, but there was no evidence of damage to the liver, and the yellow color disappeared two days after the medicine was stopped. This skin discoloration may prove a practical danger signal in the use of this drug, Drs. Hoskins and Looney pointed out.

*Science News Letter, June 9, 1934*

PSYCHOLOGY

## Queer Oriental Art Due To Their Perception

"WHAT queer perspective!" This criticism of a Japanese or Chinese print arises out of the fact that the world looks different to Oriental and Occidental eyes.

Dr. Robert H. Thouless of Glasgow University discovered differences in racial perception, by giving psychological tests to 20 East Indian students and 49 British students at Glasgow University.

When an Oriental artist paints the background people in a picture by putting them at the top, and making them just as large as the foreground people at the bottom, he is painting the world as he sees it. If he leaves out shadows, that too is because shadows play less of a part in his perception of the world around him.

"The Orientals," said Dr. Thouless in a report to the *Journal of Social Psychology*, "see objects in a manner much further from the principles of perspective than do the majority of Europeans, and also they tend not to see shadows."

*Science News Letter, June 9, 1934*

PHYSIOLOGY

## High Altitude Effects To Be Studied on Himalayas

HOW MEN and other animals adapt themselves to very high altitudes and what result such adaptation has on their bodies will be studied in the high mountain country north of Kashmir, British India, by an expedition under the leadership of Dr. Ancel Keys of the Harvard University Fatigue Laboratory. The field work will be carried on in the spring and summer of 1935.

Detailed observations will be made at the highest altitude of any scientific ground expedition in history, according to the present plans. As much as possible of the investigation will be carried out at altitudes greater than 20,000 feet. Continuous observations will be made, but especially detailed studies will be made at sea level, at 5,000 feet, 11,000 feet, 14,500 feet, 17,500 feet and 19,500 feet and at the same stations coming down.

*Science News Letter, June 9, 1934*

FOR ORIENTAL EYES

***The perspective in this illustration from an Indian book published about 1585 is not queer to Oriental eyes, because of racial differences in the way Orientals see things. The circular mat on which the candle rests in this drawing is much nearer to a circle than we would make it. The sides of the fountain, which apear divergent to Western eyes because they do not converge, are truly parallel to the Oriental.***

GENERAL SCIENCE

# Previews Into Future of Science

## Leaders in Industry and Research Foretell What the Next Century May Bring in Pure and Applied Science

PEERING into the next century, industrialists and scientists have attempted to predict the forthcoming accomplishments of pure and applied science.

These forecasts were made in connection with the "Jules Verne" survey of industrial progress in the next century arranged by General Motors Corporation simultaneously with the opening of the second summer of the Century of Progress exposition in Chicago.

Extracts from the previews obtained were:

### Future of Man

"The average life of mankind in the time of Queen Elizabeth was twenty years. Today the average is fifty-eight years for man and sixty-one for woman, who is biologically more important. . . . Recent discoveries in medicine are leading to astonishing results, and give a prospect that the life of man will soon reach the Biblical promise of three score and ten."—Drs. W. J. and C. H. Mayo of Mayo Clinic, Rochester, Minn.

"Scientific research and the applications of science in the course of 150 years have increased fourfold the productivity of labor; they have doubled the length of life. Science has made it possible for each to work at routine tasks half as long as formerly and at the same time to consume twice as much wealth as formerly. Fourteen hours of labor, shared by women and children, once provided hovels, lice and black bread for most people, luxury for a few. Seven hours of labor will now supply comfortable homes, warm clothes and healthful food for all. If the resources provided by science were properly distributed—as they will be when we have an applied science of psychology—there is now sufficient wealth to enable all to share in the desirable luxuries that science has created—running water, household electric machinery, telephones and automobiles, radios and the rest—and to enjoy in full measure the most nearly ultimate goods of life—home, friends, things to do, freedom, self-respect."—J. McKeen Cattell, editor of *Science*.

"We are on the threshold of advances in biology generally, and particularly human biology, that will fundamentally alter our outlook. . . . Already we know how in the laboratory to increase the power of lower organisms to utilize their available resources in food material and energy for vital processes, such as growth and duration of life from three to ten times over their usual performance with corresponding relative increases in size, longevity, and so forth. . . . Developments and applications along these lines are likely to come in the not too distant future."—Dr. Raymond Pearl, The Johns Hopkins University.

"Biologically speaking it is fair to say that man's social progress is now only at its beginning and that the two million years that separate us from the caveman mark only the start of human life. The progress of the next two million years is as inevitable as that of the last, and when we have reached this new goal such events as the present depression will have vanished beyond recognition."—Dr. G. H. Parker, president, American Academy of Arts and Sciences.

"The next century should see an extension in the conquest of science over the forces of nature so astounding that imagination is inadequate to conceive of the final result. In the field of organic chemistry our knowledge of the vital chemical processes of living matter will be so enormously increased that it is not too much to say that the life cycle itself may be controlled to the end that old age shall have disappeared and that many then alive may live to ages rivalling that of Methuselah."—Thomas Midgley, Jr., vice-president, Ethyl Gasoline Corporation.

### Future of Research

"The material world is so infinite in its variety that I am convinced modern science, modern inventions, and modern methods of mass production have only scratched the surface. The inventions which we have seen so far are only a foretaste of what is to come, provided only the spirit of man is pointed in the right direction and we are able to experiment in the field of social science in as scientific and good-natured a way as we experiment in the field of physical science."—H. A. Wallace, Secretary of Agriculture.

"Scientific invention must continue but social invention must provide an efficient distribution of wealth to supply buying power adequate to the flow of mass production."—Charles A. Beard, Author.

"Available work can be continually expanded and progressively higher standards of living made possible through developments of science and industrial research. At the same time in my opinion if the utmost is to be achieved there must be equal development of social consciousness on part of leaders in science and industry. Planning on national scale with a view to making this a land of comfortable, efficient, attractive homes would seem to be indicated with every industry cooperating in that definite purpose rather than each working independently and sometimes at cross purposes."—Lowell Mellett, editor, Washington, D. C. Daily News.

"It is of the utmost importance to society that research in pure and applied science be speeded up to improve the methods of industry and its products and to create new processes or products that man will desire to possess and which therefore may create new industries."—R. C. Richards, president, Lehigh University.

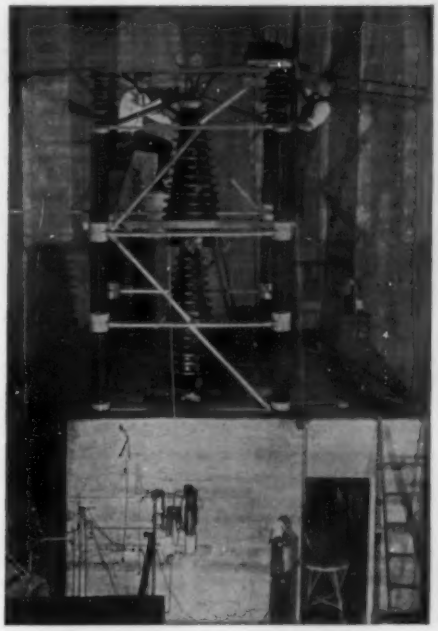
"We believe America's inventiveness is little more than started. With seventeen hundred industrial research laboratories in operation compared with two hundred twenty years ago, no other conclusion is justified."—C. M. Chester, president, General Foods Corporation.

"I believe that the brilliant start made during past hundred years toward the wiping out of disease and the lengthening and strengthening of human life is now threatened by the defeatist attitude of those advocating retrogression instead of expansion. I know personally about four major medical research projects with results promising incalculable benefits in future human strength, long life, and happiness, which are now throttled and languishing because of the imbecile attitude that what is now available must be divided up. I believe that

the most important change demanded in the scientific spirit today is appreciation of the ridiculousness of the notion that want, disease and distress amidst potential plenty is an insoluble riddle or an act of God, instead of temporary —a disaster remediable by human energy, brains and cooperation."—Paul de Kruif, writer.

"If scientific and industrial research are stimulated and not handicapped there will result in the future as in the past a stimulation of the wants of men and a much greater employment of labor than the unemployment resulting from displacement of old industries. Recent chemical research affords striking illustrations such as development of light metals of modified steels, the numerous cellulose industries, and most strikingly in the promotion of health and efficiency through biochemical investigations."—Dr. Arthur A. Noyes, California Institute of Technology.

"The frontier of scientific research and industrial application is more promising than any geographical frontier yet passed by man."—C. F. Hirshfeld, Chief of Research, Detroit Edison Company.



**REAL AND REEL**

***At the left is the impressive looking apparatus with which the hero of a German film demolishes atoms and wins gold from lead. Contrasted with this movie director's idea of what an atom-smashing tube looks like is the reality in the laboratory of the California Institute of Technology, Pasadena, pictured on the right. Even with this powerful apparatus, scientists do not expect to change lead to gold, but it is being used in many element transmutation experiments.***

### Future of Materials

"The more systematic application of the scientific method to the art of steel making and the development of more fundamental knowledge of the wonderful properties inherent in iron and its alloys is going to lead to a picture and a control of the molecular architecture of steels which will enable the user to choose that steel which is really best for his particular purpose, to improved steels of many kinds, to steels which will better satisfy the insistent demands of many diverse industries for a metal which will be satisfactory under continually severer conditions of service. This will result in the lightening, indeed in the redesign, of many structures and machines with economic advantages so great as to bring about a large amount of reconstruction."—John Johnston, Director of Research, U. S. Steel Corporation.

"Rail tires of no less than three types are ready for a coming market. An astonishing new safety device for automobiles is in the making. The major line of balloon tires has undergone a radical change resulting in much longer non-skid life."—B. Darrow, development manager, Goodyear Tire and Rubber Company.

"Rapid progress in the methods of manufacture, of improvement of quality and of methods of fabrication of sheet metal is making tremendous contributions to human welfare. Sheets for forming operations are offering homes of greater comfort and at greatly reduced cost. The application of sheet metal for pressed steel porcelain sanitary ware, such as sinks and wash basins, is making sanitary facilities of beauty available at only a fraction of former costs. The development of refrigeration and air conditioning is making healthful conditions of living available to a greater percentage of the people."—Dr. Anson Hayes, Director of Research Laboratories, American Rolling Mill Company.

"Carpet making from all modern raw materials filling carefully analyzed functional requirements will replace traditional textile materials fabricated in imitation of old world craftsmanship. Rubber pyroxylin and resins are already accepted as logical carpet materials, in addition to conventional hair and vegetable fibres. Carpets will be utilized not only for adornment but because of acoustical and thermal properties as well."—G. E. Hopkins, Technical Director, Bigelow Sanford Carpet Company.

"Incandescent lamps of improved design resulting in higher electrical efficiencies promise savings in current consumption. Ultraviolet lamps and sources of the lower wavelength radiation offer new possibilities to this general field. Further, the development of the new gaseous vapor discharge lamps, including the sodium lamp and the high pressure mercury lamp, promise new offerings in electrical efficiency and the character of lighting."—A. H. Hageman, Manager Research Staff, Westinghouse Lamp Company.

"We are just begininng to enter the age of alloys and much more is to be expected in improved physical properties and resistance to destruction by corrosion. Welding, precipitation, hardening, also heat treatment and methods of manipulation are only beginning to be understood. New materials are promised for commercial use."—William H. Basset, Research Staff, American Brass Company.

"Science has shown us how to duplicate almost all the important petroleum products by chemical treatment of the almost inexhaustible supplies of shale and coal. While such processes are not economically feasible in this country at present, they certainly will become so long before our oil reserves are fully exhausted, so that a civilization based so largely on oil heat and oil power need have no fear for its basic supplies."—E. G. Seubert, President, Standard Oil Company of Indiana.

"The greatest future development in the oxy-acetylene industry will prob-

ably be in flame machining. Applying an oxy-acetylene torch to a steel cylinder, it is possible to make a cut corresponding to a machine tool cut ½" deep with a 2" feed at a peripheral speed of 10 ft./min. and the power required for the rotation of the steel being cut may be a fractional horsepower motor."—John J. Crowe, Engineer, Air Reduction Sales Company.

"I can visualize the products of the orchard and field of Turkestan or California served in London ten years thence with all the native freshness and taste of those freshly gathered. This means suspended animation of both enzymes and organized micro-organisms. Not less interesting and romantic will be the container for these foods which I visualize as nonmetallic, transparent and nonbreakable."—Charles S. Ash, Director of Research, California Packing Corporation.

"Strong aluminum alloys will permit construction of more and better bridges for the taxpayer's dollar and further aluminization of automobile engines would improve efficiency and comfort in motoring."—F. C. Frary, Research Staff, Aluminum Company of America.

"More than any other human activity, our country's metallurgical, chemical, physical and social laboratories will enable us to satisfy those needs not yet realized and will continue to create more and betters jobs by improving our transportation, housing and recreational facilities."—W. B. Lashar, Jr., Director of Research, American Chain Company.

"No science has progressed faster than chemistry and the one inexhaustible source of chemical raw material is the farm. More and more the chemist is showing the way toward increased markets for agricultural products. This was unknown fifteen years ago. Today in a small way it is being done. Tomorrow it should be a reality."—F. N. Peters, Director Furfural Laboratory, Quaker Oats Company.

"Progress in cellulose chemistry is just beginning to strike its stride. The rayon, cellulose, and film industries are only a beginning of new industries based upon cellulose as a raw material. Pulp and paper will continue to become more and more important in this next century of advanced civilization."—Bjarne Johnson, Director Research Staff, Hammermill Paper Company.

"In the future, metal will be removed from hard materials by new types of abrasive wheels and new methods at rates comparable with the rate at which stock is removed from softer metals by milling machines today. The grinding of pulp by artificial abrasives will be so controlled that use of chemical processes will not be necessary to produce strong paper. New, harder, and tougher cutting materials will revolutionize the grinding industry and invade the field held by cutting tools, such as carboloy and stellite. Smoothness and accuracy of finish is advancing rapidly, with consequent decrease in the wear of moving parts. The life, efficiency and range of action of synthetic resin bonded abrasives will be almost indefinitely increased due to application of new resins and methods of manufacturing."—R. C. Benner, Director Research and Patent Staff, Carborundum Company.

"Ophthalmic optical development to improve the vision of mankind has by no means reached its end. New optical glasses will be developed in the future which will give optical designers a chance to improve existing optical instruments."—Carl L. Bausch, Manager Research and Engineering, Bausch and Lomb Optical Company.

"Recent developments in rubber which will undoubtedly expand are the manufacture of elastic fabrics, the application of rubber to automobile and other mechanical engineering problems to absorb vibration, the protection of chemical engineering materials against corrosion and many others."—W. A. Gibbons, Director of Development, U. S. Rubber Company.

### Future of Transport

"Tires of the future will be larger, softer and safer, running on immeasurably less air pressure."—W. O'Neil, President, General Tire and Rubber Company.

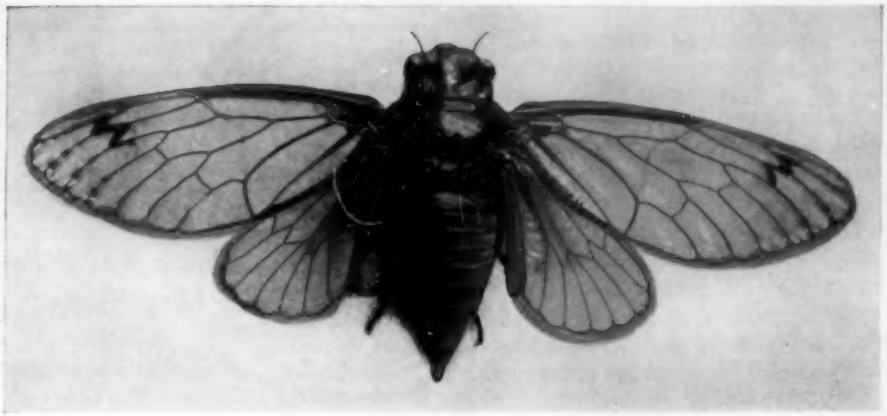
"We are looking forward to putting all transportation on rubber tired wheels, from the roughest farm implement on through a greatly increased highway freight expansion, and even to rubber tired wheels on light weight, high speed rail vehicles. We believe also that we are on the eve of high speed commercial transport overseas with large rigid airships."—P. W. Litchfield, President, Goodyear Tire and Rubber Company.

"Road building costs will be so reduced by scientific improvements in diesel track type tractors and allied equipment that all the inaccessible parts of our country will have the blessing and comfort of perfect highways for automotive transportation. The building of dams and levees, the digging of irrigation canals and ditches will be done so easily and cheaply that no one need farm stony, barren and unproductive soil, but will have available the fine fertile unused lands of this country that require only water and tillage to produce the crops that will be needed by highly paid skilled workmen."—Oscar L. Starr, Vice-President in Charge of Research Division, Caterpillar Tractor Company.

"Decentralization is undoubtedly the requisite for higher standards of living and a concomitant (*Turn to Page* 366)

## Cooperation

**"The universities and research institutes must organize to insure an earlier consideration of the social and economic effects of the discoveries of the physical scientist and industrial technologist. Under the research system to date, the social scientists get into the game too late. They wait until the discoveries of the physical scientist and industrial technologist radically upset old social and economic arrangements and then come along as a kind of wrecking crew to clean up after the catastrophe and to suggest ways of preventing its recurrence. That has proved too costly a procedure socially. From now on the physical scientists and the social scientists must work hand in hand. We must devise a new method of continuous cooperation between the physical scientists and the social scientists in all our research centers. The social scientists must be kept informed of what the physical scientists are up to, not after the physical scientists have completed their researches and worked social and economic havoc with their results, but from the very beginning of the researches. If the chemists or physicists are on the trail of a new idea in 1934 that may prove workable in 1954, the social scientists should know it in 1934, not in 1954. And, through all the twenty years between 1934 and 1954, the social scientists should be considering ways and means of making this new idea help instead of hamstringing humanity if and when it becomes workable. If we can invent such a method of sustained cooperation, we can shorten, by at least a decade, the lag between the swiftly changing processes and the slowly changing policies of our national life."—Glenn Frank, President of the University of Wisconsin.**



**W FOR WAR?**

***The marking on the wings of the 17-year "locust" is traditionally a portent of wars to come. They do not, however, even foretell a battle waged by entomologists, for the creature is relatively harmless.***

ENTOMOLOGY

# 17-Year "Locusts" Soon To Appear in Pennsylvania

## Insect Which is Really a Cicada, Not Locust, Does Not Forebode Tragedy or do Great Damage

WAR prophets over a large part of the country will within a few days have a natural portent and a sign, to which they can point as sure evidence that their direful prognostications are about to come true. Great swarms of big, thin-winged insects, each with a strongly-marked black W near the tip of each of its forward pair of wings, will appear out of the earth. They will cover the underbrush and trees, and will fill the air with their dry shrilling.

"Ancestral voices, prophesying War" —for is that not what the ominous letters on their wings signify? And are not these the dread Seventeen-Year Locusts, which are never seen except once in seventeen years, and always before some great world disaster? So the local wise men will be telling us.

These inauspicious insects will be especially thick in a limited area across the eastern edge of Ohio and the western end of Pennsylvania. There will be more of them, though more thinly scattered, over a wide area of the South, through most of northern Missouri and the southern half of Illinois, through Arkansas and thence eastward to the Southern Appalachians. Millions upon millions of them, and each with that foreboding W on both its wing-tips.

The local wise men, who will be making these head-shaking prophecies about the middle of this month, will be wrong in all except one particular. The insects are not locusts; they are cicadas, capable of very little real damage. They do not prophecy war; the W on each wing-tip is a natural marking, that appears on the wings of every generation of the insects, whether there is a war in the making or not. If war comes, these innocent helpless insects will have had nothing to do with bringing it on: human politicians and munitions manufacturers are quite capable of attending to that by themselves.

It is true, however, that the insects appear in a given locality only once in seventeen years. For the seventeen-year cicada is the longest-lived of all insects. It lives in an immature form underground for seventeen years, and then emerges, winged, to live for a short time in the upper world, mate, produce its eggs and die. The young cicadas, little ant-like things, burrow into the ground shortly after they hatch, to repeat their parents' long life cycle.

And even at that, the seventeen-year part of the story is true only for the Pittsburgh block of territory. The outbreak in the South will be of the related but shorter-lived species, the thirteen-year cicada. It cannot be told from the seventeen-year kind in appearance; the only difference is its shorter life.

*Science News Letter, June 9, 1934*

PHYSICS

## Pitot Not Pistol

A LINOTYPER making a correction just before press time, in the photograph caption in SNL June 2, '34, p. 339, evidently thought he would correct an obvious error. Who ever heard of a *pitot* tube? It must be a *pistol* tube. So it was in last week's SNL. Alas, the linotyper was wrong and the editor was right. So we are taking this means of writing a little note to the linotyper:

Dear L.: There *is* a pitot tube, named after Henri Pitot who was the first to suggest the use of pressure tube anemometers. The official National Advisory Committee for Aeronautics' definition is: "A cylindrical tube with an open end pointed upstream, used in measuring impact pressure." The pitot tube is a part of the speed indicating device used on airplanes in flight or in windtunnels where airplanes are tested. With it is used a closed tube to measure the static or still pressure, and from the difference in pressure between the pitot and static pressure tubes the air velocity can be determined. Just to be sure that you read this, we are having it set in type and having the type we might as well use it in the SNL.

*Science News Letter, June 9, 1934*

ZOOLOGY-MEDICINE

## Cats Refuse Cream in Study of Epilepsy Diet

CATS are popularly supposed to like cream, but Dr. Frederick H. Pike and Sarah R. Riedman of Columbia University have reason for thinking the popular idea of a cat's taste is all wrong.

When they tried to feed cats a ketogenic diet which contains a very large proportion of fat such as cream, the cats stubbornly refused the diet even for short periods and ate so little that they lost weight precipitately.

The ketogenic diet has been used recently as a treatment for epileptic convulsions. The Columbia scientists were planning to study the effect of this diet on convulsions in animals. The cat was selected because of her supposed fondness for cream.

*Science News Letter, June 9, 1934*

PHYSICS

## "Sound Prism" Analyzes Musical Tones Instantly

COMPLEX overtones that distinguish various musical instruments and human voices are broken up into a "sound spectrum" by a new instrument demonstrated at the annual convention of the Institute of Radio Engineers in Philadelphia. This device performs the analysis of sound in about a tenth of a second, which with previous methods required hours of tedious work.

The various frequencies of the sound are projected visually, spread out on a screen, just as a prism spreads light rays into the rainbow-like spectrum of light. The new device, which has received the convenience-name of "sound prism," was developed by Prof. Knox McIlwain and O. H. Shuck of the University of Pennsylvania. It is expected to be of great assistance to radio engineers, in determining how far apart in wavelengths it is necessary to separate broadcasting stations to secure the natural transmission of sounds produced by various musical instruments.

The necessary wavelength separation of radio stations for the natural transmission of sounds was discussed at the meeting of the National Association of Broadcasters. This may become a problem of great importance, since if it is necessary to provide a wide wavelength separation of stations, the broadcast band will be too small to accommodate all those now in existence.

*Science News Letter, June 9, 1934*

EUGENICS

## Stanford Makes Record For Co-ed Marriages

AN AMERICAN girl who yearns for a higher education plus a husband will have the best chance of getting the husband if she graduates from Stanford University.

This is the lesson to be read from statistics on marriage rates for five western colleges, presented to the Eugenics Research Association. The investigation was made by Mrs. Caroline H. Robinson of Swarthmore, Pa.

Western college girls, the general verdict runs, are more likely to marry, and to marry early, than graduates of Swarthmore, which college, Mrs. Robinson said, "has been thought to hold the palm in these matters in the East."

The University of California at Berkeley stood out as having a low marriage rate among its women graduates. Stating that from 1874 to 1907 one half of this university's alumnae remained unmarried, Mrs. Robinson compared it to Barnard which has a low marriage rate. Both, she pointed out, are metropolitan education centers.

The marriage rate for the men graduating from western colleges was far higher than for Harvard men.

Throughout the 5,489 cases studied, Mrs. Robinson found a tendency to marry earlier and earlier among the more recent college classes.

In a special study of the marital status of over 4,000 Stanford alumni, Dr. C. Gilbert Wrenn of Stanford University reported finding that "maritally, Stanford men form a very significant group with a marriage rate far higher than that at Harvard." In the years between 1903 and 1912, the rate rose to a peak of over 89 per cent. In the preceding decade, a depression time, and in the decade including and following the World War, the rate was 82 per cent. Just the opposite of the men, the Stanford women graduates had a higher marriage rate in depression eras than in prosperous years.

*Science News Letter, June 9, 1934*

MEDICINE

## Malaria in Drug Addicts Treated By New Medicine

THIRTY-NINE morphine addicts admitted to Bellevue Hospital within the past six months had malaria.

A study of ten of these patients showed that the malaria was acquired as a result of sharing a home-made hypodermic outfit—"the works" as the addicts call it—with other addicts, some of whom apparently had malaria germs in their blood, Drs. Emanuel Appelbaum and Ben B. Gelfand of Bellevue Hospital reported to the American Medical Association.

The addicts injected the morphine directly into their veins, using a needle attached to a medicine dropper. The outfit was neither cleaned nor sterilized between shots, going from one man's vein to another and sometimes carrying malaria-infected blood with it.

Atabrine, a relatively new laboratory-made medicine, was used in treating six of these patients. The results were so promising that the physicians recommend giving it further trial in treating malaria patients.

*Science News Letter, June 9, 1934*

# IN SCIENCE

ENGINEERING

## Dry Ice May Compete With Blow Torch in Metallurgy

SOLID carbon dioxide, popularly named "dry ice," may, at a temperature of 112 degrees below zero Fahrenheit, compete with heat in securing "shrink fits" for machine parts.

W. H. Swanger of the National Bureau of Standards who has been conducting experiments with solid carbon dioxide reports that machine shop practice may come to accept the new method of applying excessive cold instead of heat in shrinking metals.

When it is necessary to secure a metal band to a shaft, the usual practice is to heat the band. Expansion allows it to be slipped into place, and as it cools it contracts to a tight fit. However, by "refrigerating" the inside part, or shaft, it can be shrunk materially. The band is slipped on and when the shaft warms to room temperature it expands to normal size, and a tighter fit is secured.

Relatively a curiosity five years ago, the domestic production of frozen carbon dioxide has in recent years exceeded 40,000 tons.

*Science News Letter, June 9, 1934*

MEDICINE-PSYCHIATRY

## Threats Against Life Cause Digestive Ills

THREATS to life and security do evil things to the digestion. Cases were reported by Dr. George E. Daniels of New York City to the American Psychiatric Association.

One young woman was admitted to the hospital suffering from nausea and abdominal pain. Her fear of being discharged from the hospital brought out the story that she dreaded, perhaps needlessly, the possible reappearance of her former worthless husband with whom she had been most unhappy. She was sure he would kill her or kidnap their child. When psychiatrists made her feel that she would be protected she recovered from her stomach disorder.

*Science News Letter, June 9, 1934*

# NCE FIELDS

ARCHAEOLOGY

## Ancient Ruins May be Set Aside for Research

THE GOVERNMENT is considering a new kind of prehistoric national monument.

Certain ancient ruins would be set aside, not for the general public to visit, but for scientists to explore.

The suggestion of establishing such reservations for research was made by Frank Pinkley, Superintendent of Southwestern National Monuments. The proposal is now being discussed by Park Service officials with scientists at the Smithsonian Institution and other well known archaeologists.

An example of the type of reservation under consideration is an open ruin in the Verde Valley of Arizona, which is valueless from an agricultural and a grazing standpoint. The area contains enough research material to provide many seasons of scientific work. As it is near Montezuma Castle, a cliff-dweller ruin national monument open to the public, it could be supervised by the custodian of that monument, thus keeping administrative expense to a minimum.

*Science News Letter, June 9, 1934*

PSYCHIATRY

## Size of Family Affects Behavior of Children

CHILDREN from large families do better in arithmetic classes; children from small families are better in reading.

More intelligent children, as measured by intelligence tests, are found in small families.

Children in small families are more apt to steal and commit sex offenses, while children in large families are more given to lying.

These facts, gleaned from a study of over twenty thousand children in Massachusetts public schools, were reported by Dr. Neil A. Dayton of Boston to the American Psychiatric Association at the closing session of its meeting in New York City. The children were all below the average mentally and had had to repeat each year's work in school before passing into the next grade. Dr. Dayton did not state whether or not the facts learned from studying these children would apply to children of normal intelligence.

Restriction of immigration will reduce the number of mentally deficient persons, in Massachusetts at least, Dr. Dayton concluded, because the large families, from which children with lower intelligence quotients come, are found among the immigrants.

As to personality, the children from the large families were rated as obedient, social, stubborn, suggestible and quarrelsome. Those from the small families were emotionally unstable, seclusive, selfish, egotistical and overaffectionate.

*Science News Letter, June 9, 1934*

PSYCHOLOGY

## Heart Shown to be Real Center of the Emotions

ALTHOUGH long neglected by scientists, there is a real scientific basis for the popular expressions that refer to the heart as the seat of the emotions, such as: "soft-hearted," "dying of a broken heart," and "grief gnaws at the heart."

Experiments upholding this idea were reported by Dr. Theodore P. Wolfe of New York City to the American Psychiatric Association.

When pleasure is felt, he found, there is an increased blood flow to the limbs and body surface and a decreased blood flow to the digestive organs. With unpleasurable feelings the reverse is true. This may be called, he explained, the scientific basis for the expression, "my heart dropped into my stomach."

Merely the thought of moving an arm caused an increased blood flow to it, he found, although when someone else raised the patient's arm without his having thought about it, there was no increase of blood flow into it.

Another example of the close connection between the heart and the mind is found in dreams. Questioning some hundred heart disease patients at the Presbyterian hospital in New York City, Dr. Wolfe learned that most of them had dreams in which their lives were threatened. These dreams occurred only at the time of a flareup of the heart ailment.

*Science News Letter, June 9, 1934*

MEDICINE

## "Brain-Stones," Rare Disease, Reported

AN UNUSUAL case of "stones in the brain" was reported before the meeting of the American Psychiatric Association by Dr. Jacob Kasanin of the Rhode Island State Hospital for Mental Disease. This condition is a disease of the blood vessels of the brain in which calcium, the mineral found in bones, is precipitated into the small arteries.

Physicians believe the disease tends to run in families and that it is associated with epilepsy and mental deficiency.

It should be easy to diagnose the condition by X-ray pictures, Dr. Kasanin said. Only about half-a-dozen such cases have been reported in America, and the first ones were thought from the patients' symptoms and behavior to be brain tumors. The underlying cause of the condition is not known, except that it is some degenerative condition of the brain.

*Science News Letter, June 9, 1934*

AGRICULTURE

## Selenium Poisoning Prevented with Sulfur

THE possibility of combating selenium poisoning in animals through a sulfur treatment of the growing plant is suggested by Dr. Annie M. Hurd-Karrer, pathologist of the U. S. Department of Agriculture.

Selenium injury in wheat plants, according to Dr. Hurd-Karrer, is almost identical with the sulfur-deficiency disease. By growing wheat plants in soil treated with sodium selenate and later further treated with various sulfur compounds, as well as the element itself, it was found that the green-tipped white wheat leaves of selenium-injured plants could be entirely prevented.

Dr. Hurd-Karrer's thesis is that the selenium compound reacts with the sulfur, the latter elements becoming unavailable to the plant, resulting in a malnutritional disease, sulfur deficiency. When an excess of sulfur is added, so that the effects of the selenium are overcome, a normal plant is produced.

This inhibition of symptoms, says Dr. Hurd-Karrer, suggests that the entrance of selenium into plants and the consequent toxicity for animals may be conditioned by the sulfur available.

*Science News Letter, June 9, 1934*

PHYSIOLOGY

# "Feeble" 3.2 Beer Hailed as Best for Health and Pleasure

WHEN beer of 3.2 per cent. alcoholic content was first re-legalized in this country, a generation of drinkers brought up on bathtub gin raised voices of protest against such "feeble stuff," and awaited impatiently the day when they could get "beer that is beer—the kind they have in Germany."

But now comes a German Daniel to judgment against them. Brushing aside the odd two-tenths of a per cent., Dr. P. Schmidt, a well-known German physiologist, contends for the superior value of 3 per cent. beer over 4 per cent., from both the personal-hygienic and the sociological points of view.

"There can be no doubt at all," he says, "that our 4 per cent. export beers are not suited for drinking in quantity at Bierabende and similar occasions. Even if one drinks only a quart and a half of beer during a Bierabend (and that is certainly a moderate quantity), he has consumed 60 grams [approximately two ounces] of pure alcohol; and if he takes some of the 4.5 per cent. lager or bock beers the alcohol consumption goes up to 70 grams.

"It is unanimously agreed that such quantities are bad for the health, either on account of the alcohol alone, or in the case of heart or kidney patients on account of the volume of liquid. The toxicity curve of ethyl alcohol rises after 40 grams, and quite steeply after 50 grams."

As a "golden mean," Dr. Schmidt recommends the "excellent light draught beers such as one finds in Bavaria and Bohemia, with 3 per cent. or less of alcohol."

But the 2.5 per cent. beers made by the top-fermentation process slip off the golden mean again, in Dr. Schmidt's opinion. Such beers as Beliner Weiss, Gose and Lichtenhainer, he thinks, get their lower alcohol content at the expense of a too great acidity.

Dr. Schmidt concludes with two words of advice: keep your beer cool, and drink it slowly. He suggests a serving temperature of about 50 degrees Fahrenheit for dark beers, and 43 to 45 degrees for the light varieties. Cool beer seems to give up its alcohol more slowly to the blood than does warm beer.

As for the rate of consumption, he waxes emphatic: "One of the most important principles for all alcoholic drinks is: never take them on an empty stomach. Always eat while you drink, if nothing more than a breadcrust; or better, eat well first, and then drink. Further: drink slowly and sensibly!"

*Science News Letter, June 9, 1934*

ARCHAEOLOGY

## "Tiger Tomb" With Annex Found at Monte Alban

**See Front Cover**

A TOMB guarded by the fierce figure of a tiger with bared fangs is a recent discovery of scientists exploring Monte Alban.

The discovery was unexpected. The Mexican archaeologists had chosen a place more than a mile from the cemetery zone of the ancient Indian city, and had begun digging there in hope of finding articles used by the city inhabitants buried in undisturbed layers in the ground. But it now appears that very little of the enormous buried mountain city is natural ground. Every spot seems to have been built up, cut down, leveled, or otherwise changed.

The new tomb, the fiftieth found since 1931, holds the re-buried bones of what appear to be four individuals. Only a few bits of jade and pottery are with them. But the tomb has an annex, or storehouse joining it, piled with the trappings of the dead.

When the stone slabs covering the door of this annex were lifted, the excavators saw at the back a big pile of elaborate black pottery. Heads of fancy gods protruded here, and arms and legs there. The objects, if once neatly arranged, had been tumbled down by the frequent Oaxaca earthquakes.

Five big funerary urns shaped like ornate god-figures were picked out and lined up, making a row all alike as if from one mold. Incense burners, food dishes, and other tomb furnishings were in the jumble.

The most beautiful of the gods whose images were stored here is a figure of Xipe, Mexican god of fertility in whose honor gruesome flaying rites were held. On this occasion, Xipe bears no special symbols of his gruesome cult, but is shown as a water carrier with a big jug on his back held in place by a forehead strap. That he is no common peon, but a god, is shown by his elegant attire which includes necklaces, pectoral, feather collar and other adornments.

The interior of a tomb similar to number fifty is pictured on the front cover of this week's SCIENCE NEWS LETTER. It is the fortieth discovered, and illustrates clearly the V-shaped construction of the ceiling, niches in back and side walls, quantity of plain, black pottery and the customary number of five ornate funerary urns. Three sit on one side of the extended skeleton and two on the other. The tomb is about a yard wide. Earth, sifting through cracks in the stone, has covered the stone floor and the objects on it with a thick layer.

*Science News Letter, June 9, 1934*

AVIATION-METEOROLOGY

## Ideal Flight Paths Planned By New Graphical Method

AIRPLANE TIME records for flights of 500 miles or longer now await the will of the meteorologist. With the use of the modern high performance plane whose cruising speed is not materially affected by higher altitudes, as much as a fifth in time may be saved by choosing the correct flight path.

Combining a consideration of the air mass fundamentals and many arduous aerodynamical calculations of aircraft performance, W. C. Rockefeller, research fellow in the meteorological department of the California Institute of Technology, has developed a graphical method to determine the most efficient flight course for a given airplane. Thus shortened time schedules for air transport companies can be expected. Where punctuality in schedules is more desirable than time records, lower operation costs will result by using a lesser fraction of the allowable power output of the engines whenever meteorological conditions are favorable.

The chart contains various calculated rates of climb curves for the takeoff point and similar rates of glide curves for the destination point. Since climbing takes time and gliding saves time, the obvious path is that one which gives the minimum time for climb and maximum for glide.

The meteorological variables are very

important and consist of wind velocity, its change with altitude, and the angle it makes with the course. With the aid of a cleverly devised table, the effect of the winds aloft upon the rated cruising velocity of the airplane is obtained, and this effective cruising speed is plotted upon the chart. The intersection of the maximum effective cruising velocity with the minimum rate of climb and maximum rate of glide curves results in the most efficient flight path.

Although the theoretical considerations are complicated, the resultant graph is quite simple and a best flight path can be determined in fifteen minutes. In transcontinental flights, however, the meteorologist must correct for the progress of waves in air masses which will influence the winds aloft at the time the airplane will be flying over a given area.

*Science News Letter, June 9, 1934*

MEDICINE

# Cancer Growth Checked By Kidney Secretion

## Substance Found in Secretion of Expectant Mothers Retards Cancerous Growth in Mice and Rats

A SUBSTANCE that produced a tenfold decrease in the growth of cancers in mice has been found in the kidney excretion of expectant mothers, it was announced by the International Cancer Research Foundation in its first scientific report.

The discovery of this substance was made by Drs. Henry J. Ullmann, Fritz Bischoff and Richard D. Evans, with L. C. Maxwell, chemist, of the Santa Barbara Cottage Hospital, Santa Barbara, Calif., whose studies were made under a grant from the foundation.

So far the studies have been made only on experimental animals. No application of the results to the treatment of human cancer was reported.

The fact that a small but important gland in the head, the pituitary gland, produces a growth-promoting substance which affects the growth of cancers was the starting point for the studies which led to the discovery of a cancer-inhibiting substance in the expectant mother's excretion.

X-ray treatment of this pituitary gland significantly retarded the growth rate of cancers in mice and rats under certain conditions, the Santa Barbara investigators found. However, this could not be applied to the treatment of cancer unless a way could be found to X-ray the pituitary without destroying its ability to produce certain other important substances, such as the sex hormone.

The decrease in cancer growth rate obtained by X-raying the pituitary was augmented in some animals by injections of a preparation from the kidney excretion of expectant mothers, Dr. Ullmann and associates found. This suggested a more practical method of treating cancer. The next step was to try the kidney excretion without the X-ray treatment.

According to the most successful experiment reported, an amount of this substance equal to thirty times the weight of the mouse contains enough inhibiting substance to produce a tenfold retardation in the growth of the tumor.

The substance which checks tumor growth is not the sex hormone which has been found in kidney excretions of women and other animals before the birth of offspring and which forms the basis of the very delicate Ascheim-Zondek test for pregnancy.

Whether the new substance has a specific effect directly on the cancerous growth or whether it checks the growth indirectly by destroying the growth hormone of the pituitary gland has not yet been determined.

*Science News Letter, June 9, 1934*

ANTHROPOLOGY

## The Annoying Cowlick Is a Strictly Human Trait

SCIENCE has discovered something good to be said for that plague of mankind—a cowlick.

Every mother who brushes desperately at her son's hair to subdue a bristling cowlick at the crown can take comfort. A cowlick, anthropological investigations have disclosed, is a truly human trait. It is typical of man alone. However monkey-like may be Junior's behavior at times, that cowlick—if he has one—is a reassuring badge. He's human.

Dr. T. D. Stewart, physical anthropologist of the Smithsonian Institution, is making a study of the directions in which hair grows over the whole body. He is comparing man in this respect with various numbers of the anthropoid family, the gorillas, chimpanzees and orangs.

Orang-utans have a somewhat similar pattern of hair to the human cowlick, but it occurs on the back of the head, not the crown. The cowlick is a point of divergence, at which the hair streams out in all directions.

The cowlick is the most conspicuous divergence of hair in a human being, but the hair direction pattern of the back is perhaps even more striking, Dr. Stewart's investigations show. The hairs start from both sides and converge at about the middle of the spine. In anthropoid apes the back hair streams downward from the back of the neck and shoulders, suggesting a continuation of the head hair pattern.

*Science News Letter, June 9, 1934*

RADIO

## High Power May Make Radio Stations Interfere

RADIO tuning which separates stations according to their wavelengths may not be sufficient to prevent interference if the power of broadcasting transmitters is sufficiently increased, Dr. Balth van der Pol, director of the Phillips Radio Works in Eindhoven, Holland, stated before the meeting of the Institute of Radio Engineers.

Dr. van der Pol reported that interference has been noted in Holland between two distant high-power European broadcasting stations separated in wavelength by over 800 meters. If these conditions appear as the power of American broadcasting stations is increased, the Federal Radio Commission may have new problems to consider.

Dr. van der Pol, who directs one of the largest radio research organizations in Europe, attributes the observed interference to an interaction or cross-modulation of the two high-power signals in the region of the upper atmosphere called the Kennnelly-Heaviside layer.

*Science News Letter, June 9, 1934*

PSYCHIATRY

# Emotional Disturbances May Cause Physical Diseases

EMOTIONAL disturbances may be the cause of such physical diseases as stomach ulcers, goiter and diabetes. Not merely the symptoms of such ailments, but actual changes in the tissues of various organs and glands may be produced by emotional factors alone.

These facts, showing the close relation between mind and body and personality, were brought out at the meeting of the American Psychiatric Association and were particularly emphasized by the association's presiding officer, Dr. George R. Kirby of New York.

Just as medical leaders stress prevention of diseases or failing that, their prompt diagnosis in the early stages when there is most hope for cure, so psychiatric leaders are urging prevention of the diseases, both mental and physical, that arise from purely emotional factors.

Education has played a big part in reducing the annual toll taken by tuberculosis, diphtheria and typhoid fever. In the same way, education can reduce the amount of disease due to mental, nervous or emotional disturbance, Dr. Kirby pointed out.

People should learn to take their worries and difficulties to a psychiatrist just as they take physical aches and pains to a physician. Merely telling the story of an unhappy situation, talking over an anxiety or difficulty with the psychiatrist will help, but the psychiatrist can often give further aid in restoring peace of mind. In this way many physical ails can be prevented.

There are no statistics showing how many cases of stomach ulcers, colitis, diabetes, goiter or even heart trouble were caused by emotional disturbances, Dr. Kirby said. But figures from various big diagnostic clinics show that for about half the patients who come in with complaints of physical disease no sign of such disease can be found by the most careful examination with X-rays and all the other aids of modern medical science.

Even in animals emotional shock or disturbances can produce physical diseases. This has been shown most strikingly in diabetes, the condition in which the body is unable to utilize properly the carbohydrates eaten in the diet and in which sugar is excreted via the kidneys. An emotional diabetic condition has been produced and variations in the symptoms of diabetes have been shown to occur in response to emotional stress so that it seems actually possible in some cases to measure the degree of emotional reaction in terms so tangible as ounces of sugar, Dr. Kirby said.

Psychiatrists hope that physicians in the future will not only examine a patient by taking his pulse and blood pressure and by X-ray pictures but will analyze or examine his personality and his emotional make-up as well in order to find what is the real cause of his ailment and how to treat it.

*Science News Letter, June 9, 1934*

▼ RADIO ▲

HYGIENE OF HAY FEVER

an address by

Dr. Harry S. Bernton

Professor of Hygiene and Preventive Medicine at Georgetown University

Wednesday, June 13, at 3:30 p.m., Eastern Standard Time, over Stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

PSYCHIATRY

# Bobbed Hair and Tinted Nails Called Self-Mutilation

SELF-MUTILATION, ranging from such socially accepted forms as bobbed hair and trimmed, crimson-painted fingernails to the abnormal cutting off of an arm or starving one's self to death, were discussed and explained by Dr. Karl A. Menninger of Topeka, Kansas, before the meeting of the American Psychiatric Association.

Dr. Menninger calls this self-mutilation localized self-destruction. It is also seen in certain apparently sincere but unsuccessful attempts at suicide. The motive in these cases is not to die but to punish one's self as atonement for some real or fancied wrong-doing.

A dramatic example given by Dr. Menninger was the case of an attractive young woman of thirty who first killed her three-year-old daughter and then, as a measure of punishment and atonement for this crime, threw herself on a railroad track in such a way that an oncoming train cut off her forearm. The young woman had suffered from a severe depression in which she felt that life was full of sorrow for which she was chiefly responsible.

She was confined in a hospital and was showing some improvement when her mother insisted on taking her home without the physician's consent. Thereupon the young woman killed her child and mutilated herself. She said she had killed her child to save her from such suffering as she herself had endured.

After getting her own arm cut off she rapidly recovered from her mental disease and has remained well ever since. Examination after her recovery brought out the fact that she and her mother "never got along together." The psychiatrist's explanation of the case is that she hated her mother so much she committed murder and then offered propitiation by mutilating herself. In her confused mental state, her mother, child and self were all the same to her.

Speaking of socially accepted forms of self-mutilation, Dr. Menninger said that fundamentally men's shaving and hair cutting indicate some wish to be accepted by civilization in return for the sacrifice of a totem or badge of virility.

*Science News Letter, June 9, 1934*

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In recent years, Indians have shown evidence of their business capacity by conducting cooperatives in cattle and timber, and other business ventures.

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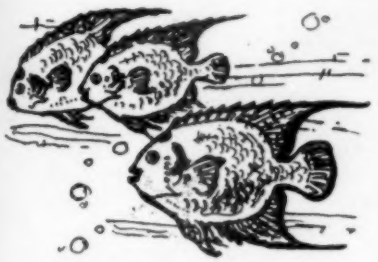
Lighthouse keepers along the Maine coast are gathering up the birds that lose their lives near the lighthouses, so that the Acadia National Park naturalists can study them for any information of scientific interest.

NATIONAL PARKS

## NATURE RAMBLINGS

*by Frank Thone*



**Park Without Mountains**

EVERGLADES National Park, now assured to the United States by the action of Congress, will be unique among the larger national parks. It will be the first tropical reservation of its kind in the United States proper, and it will be the only large national park without any mountains.

When Yellowstone National Park was developed in the West, followed by such mountain magnificences as Yosemite, Glacier and Rocky Mountain National Parks, a sort of fashion was set; it was expected that an area must be rugged and steep to be a proper candidate for national park status. The beginnings of the national park system's eastern extension followed suit: Acadia and the Great Smokies, and the proposed Shenandoah park near Washington, D. C.

Partizan opposition to the Everglades bill attempted to take advantage of this somewhat nebulous though perhaps natural tradition, and tried to hoot it down with cries of "snakes and alligators," but the bill went through in spite of them.

If the opponents of the Everglades National Park had taken the trouble to look into very recent history they would have found that the project was investigated pretty thoroughly during the administration of former President Hoover, and that both official and unofficial investigators were practically unanimous in recommending its addition to the national park system.

The investigators included many noted botanists and zoologists, who pointed out that in addition to the "snakes and alligators"—interesting creatures in themselves, when it comes to that—the area shelters innumerable birds, including several exceedingly beautiful heron species, spoon-bills and the almost extinct "bone-headed" ibis. Among the little "keys," or islands off the coast, some of which are included in the new park area, swarm innumerable tropical fish, good for sport as well as for "just looking." The royal palm, stateliest of tropical trees, rears its head high above the "hammocks" or islands of trees that stand here and there in the vast sea of grass that is the Everglades.

A good road, the Tamiami Trail, cuts across the peninsula near the northern boundary of the park area. It is proposed to establish the new Seminole reservation to the north of this road, outside the park, so that motor tourists will have a chance to glimpse the fascinating native tropical plant and animal life on one side, and the equally fascinating life of one of our strangest Indian tribes on the other, as they drive through.

For those who wish to see the wild life of the park more intimately, there will be canoes with Seminole guides, and foot trails over the dry-land areas—for there is plenty of dry land in the Everglades, "snake-and-alligator" Congressmen to the contrary notwithstanding.

*Science News Letter, June 9, 1934*

ARCHAEOLOGY

# Mayan Engineers Lacked Imagination of Artists

LACK of imagination kept Mayan Indians in the American tropics from looking at their beautifully ornate stone buildings and seeing how the construction could be greatly improved.

For want of imagination, those Mayan engineers never discovered the principle of the true arch. They never learned the trick of bonding or overlapping their building stones to make a firmer structure.

This is the verdict of Lawrence Roys, noted engineer, who has just completed an appraisal of the engineering knowledge of America's most famous prehistoric builders. Mr. Roys made his study under the auspices of the Carnegie Institution of Washington.

Imagination of the Mayas was poured out on artistic creations. The sculptors never wearied of contriving elaborate patterns and resplendent figures of gods and men. Where stone was used in artistic expression, says Mr. Roys, it "came alive." And as the sculptors advanced in their esthetic portrayals, they also advanced technically. But the engineers and architects who laid the plans and raised the walls achieved no comparable progress in technique.

"It would seem," says Mr. Roys of the Mayas, "that their architects thought in terms of monolithic masses wherever possible, and took comparatively little interest in the manner in which individual stones were laid together."

The Mayas developed only moderate skill in fashioning the dry rubble masonry of roadways, platforms, and pyramids. They do not seem to have tried using wood to supplant stone in their more permanent structures. Their wall building methods set up strains when the foundations settled, and resulted in long vertical cleavages. They apparently never racked their brains to avert such mishaps.

In handling lime cement or concrete, on the other hand, Mayan builders made better progress, and Mr. Roys is highly complimentary to the real skill they acquired in using this medium. As for their greatest engineering achievement, he considers this to be the vaulted roof. Somebody used imagination there.

Whether the latest studies of science find something to praise in the Mayas or something to disparage, these Indians of tropical America who raised the greatest prehistoric civilization on the continent remain always impressive. It is impressive now to consider that Indians with not very much imagination for engineering problems nevertheless built the most distinctive, and some critics have said the most beautiful, architecture to be seen anywhere in the Americas.

*Science News Letter, June 9, 1934*

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Government plant breeders have succeeded in crossing sugarcane with a sweet sorghum, in their efforts to produce a plant that will mature earlier and thus tend to avoid hazards of early frost; but the sugar content of the cross is not yet determined.

ASTRONOMY

# Bonnets for Street Lights Will Aid the Star Gazers

THANKS to modern electric street lighting, a generation of city children is growing up that has never really seen the stars.

Cows have been added to some zoological gardens because many children have thought that milk grows naturally in bottles.

Likewise, it is necessary to have planetaria, intricate projection devices that paint in light synthetic stars on artificial skies. There children and grown-ups who are sky-blinded by city lights may learn the constellations in the hope that some day they may venture into the restful darkness of the countryside and actually see them.

The great blaze of light that marks from afar a great city represents waste, light that is thrown up into the sky and serves no possible good. The suggestion has been made by Capt. J. F. Hellweg, superintendent of the U. S. Naval Observatory at Washington, that much of this upward wasted light could be reflected downward to the streets and pavements if each street lamp had a parabolic mirror for a hat. Considerable progress has been made in designing street light fixtures that put more of their light where it is needed, but Capt. Hellweg believes that more careful design and proper installation of reflectors would more than pay by allowing more adequate lighting or smaller bills for electricity.

In Capt. Hellweg's opinion, there would also be a military advantage in dimmer lights as seen from the sky because in time of war attacking airplanes would not find their targets so easily.

The sky lighting of great cities may become troublesome to those professional astronomers who man great telescopes. Stray light that brightens the sky hinders their seeing or photographing faint stars. As Washington has grown up around the U. S. Naval Observatory, its bright lights may become more troublesome although they have not yet seriously interfered with the regular positional observational work of the government astronomers.

Los Angeles, Hollywood, and dozens of towns lie below Mt. Wilson, Calif., on which is perched the world's largest telescope and lesser star mirrors. In future years if the glare of their lights increases in intensity, it may even interfere with the more delicate observations from that great observatory.

*Science News Letter, June 9, 1934*

## From Page 358

to decentralization is better transportation."—W. C. Hamilton, Research Director, American Steel Foundries.

### Future of Buildings

"We have had a large group working for four years to produce a cheap but modern house for the masses. A five room house, equipped with every article of furniture, linens, rugs, kitchen utensils, in a word, everything together with a garage and the lot with all improvements such as sewers, pavement, sidewalks, lawns, trees can be sold to the workingman for two thousand dollars, allowing adequate profit to the manufacturer, adequate time financing cost and every other similar type of expense,"—L. R. Smith, President, A. O. Smith Corporation.

"We are on the eve of a great development of refrigeration both in air conditioning of railroad cars, theatres, restaurants and private dwellings and refrigeration of foods."—E. C. Van Diest, President, General Service Corporation.

"The office building in the future will be a shell structure only, and interiors may be made available to tenants quickly and economically, and designed to suit their own particular needs. As one step in our own research program in this field, we put on the market about a year ago a new type of partition structure made from pre-fabricated units, which, combined with ceiling and floor units that we already had available, provide a complete interior shell for office buildings."—William R. Seigle, Chairman, Johns Manville Corporation.

"It is not unreasonable to expect the future to give us any desired comfort in the home at a cost within the reach of the majority and any desired food regardless of location or season of the year."—Wm. R. Hainsworth, Director of Engineering, Servel, Inc.

"Through the development of new and better devices in transportation, air conditioning, industrial processes, home applications and improvement in public health, we can expect in the next few years great improvements, the creation of new industries and new jobs through the commercialization of new scientific knowledge, which is now being obtained faster than ever before."—L. W. Chubb, Director Research Laboratories, Westinghouse Electric and Manufacturing Company.

### Future of Communication

"Lithography and printing can now be appreciated only through the medium of vision. With certain modifications they can conceivably be made to appeal to the auditory sense as well."—Robert F. Reed, Department of Lithographic Research, University of Cincinnati.

"New avenues of approach to the use of ultra short waves have recently been opened. Multiplex transmission send-


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ing three different radiograms simultaneously on the same wave length will be utilized in the new domestic radio telegraph service of RCA. High speed radio facsimile gives promise of a new method of reproducing messages in their original form instead of by coded dots and dashes."—David Sarnoff, President, Radio Corporation of America.

"New developments will give us pictures in real color, stereoscopic in character, and with sound practically as faithful as the original."—E. H. Hansen, Director of Sound Recording, Fox Film Corporation.

*Science News Letter, June 9, 1934*

PSYCHIATRY

# Fairy Tales Given Approval If They are Properly Told

FAIRY TALES are all right for children if they are properly told. But they may do much harm, even causing a nervous breakdown after the child has grown up, Dr. Sandor Lorand, psychiatrist of New York, declared at the joint meeting of the American Psychiatric and Psychoanalytic Associations.

A case of a grown man who still lived in an imaginary fairy-tale world was described by Dr. Lorand as an example of the harm fairy tales can do under certain circumstances.

"The man was in his thirties and accomplished in his social and economic status, but the city streets on which he moved, the house where he lived, the meadows and forests where he played golf and the lakes where he went fishing were all filled up for him with giants, ogres, witches and strange animals.

"In his daily routine life he seemed to come across friends whose faces at times appeared bird-like and whose noses protruded like beaks."

In his dreams strange prehistoric animals reached through the window, and big and baby elephants, snakes and the wolf of Little Red Riding Hood were all present.

These creatures of his imagination were, in the popular phrase, driving him nearly crazy. As the psychiatrists would describe it, he was suffering from a neurosis and was obsessed with fears.

Yet in spite of this case, Dr. Lorand does not ban fairy tales for children.

"They have a constructive value and they fill a need that the child has," he asserted.

The effect they will have for good or evil depends largely on how they are told and somewhat on the conflicts that the child may be already facing. Dr. Lorand gave the following directions for telling fairy stories:

"The story must obviously be suited to the child's age and condition. Care should be taken that the tale is told in the proper physical and psychological setting. The time of the day when the story telling takes place is, of course, important (no ogre story before bed time). Even such minor details as voice modulation must be given careful consideration. Above all, the story teller should be certain that the story is really for the child, and is not told out of a sense of duty, or only to relieve certain tensions of his own."

In the case described, the fairy tales were not entirely responsible for the patient's condition, Dr. Lorand explained. The underlying cause was an Oedipus complex from which the patient suffered as a child and which he had never really outgrown.

In this case, the fairy tales which the mother told her son while waiting for the father to come home eased and partially solved the Oedipus situation. When the situation, never completely cleared up, arose again in his adult life, the patient unconsciously turned back to the fairy tales which had given relief in his childhood. Only this time instead of easing the situation they aggravated it.

*Science News Letter, June 9, 1934*

PSYCHOLOGY

## Immigrants Teach Us What to do With Morons

MORONS, poor weak-witted jetsam of our hit-or-miss human breeding, have a useful place in the world. And the common sense of peasant-stock immigrants can find that place better than most of our fine-spun social theories. So Dr. Charles Bernstein of the State School for Mental Defectives at Rome, N. Y., indicated in an address before the American Association for the Study of Mental Deficiency.

"The second generation of foreign-born will show us what to do with our morons," he declared.

The foreign-born in our population, particularly the Poles and Italians, know what to do with morons, Dr. Bernstein continued. They put the sixteen-year-old girls of subnormal intelligence to work in their homes, doing housework and watching younger children. They put the boys of this class to work in the fields.

The moron of the future will be our common laborer as he has been in the past, Dr. Bernstein prophesied. But he will be more stable.

### Proper Environment Needed

The problem of delinquency among morons can be very largely solved by handling the morons as the Poles and Italians in this country do, Dr. Bernstein seems to think. The biggest task now is to create the proper environment for them after they leave the state schools for mental defectives.

Stable morons who give no trouble come from stable, orderly homes. Nine-tenths of the morons are in this class. The other tenth, which is made up of the group of delinquent mental defectives, comes from disorganized homes. The state must do something for this group. If they are returned to their disorganized homes after leaving the state schools their training in routine, orderly living will be undone and they will return to their delinquent ways.

### Released to Special Homes

For this group, particularly, Dr. Bernstein recommends way-stations of the sort established by the Rome State Schools over twenty years ago. When these children are released from the school they are placed in special homes, twenty of them living together under the supervision of a stable married couple. The boys are put to work on farms and the girls help with housework or in the country-town mills, when they can be given jobs without displacing other workers. Before this depression this was easy to do because the morons would work for low wages which the mentally normal scorned.

These young people spend three years at the colony-home and are discharged at the age of seventeen, able to live an independent, orderly life.

Out of 2,500 cared for in this way, less than one-tenth failed to adjust themselves when they left the colony.

*Science News Letter, June 9, 1934*

# First Glances at New Books

**Current History**

THE MODERN WORLD: A PAGEANT OF TODAY—H. C. Knapp-Fisher—*Dutton,* 447 p, $2.50. Conversationally, as a good teacher might talk to teen age boys and girls, this book on modern civilization is written. The point of view is British, but although the British empire and its dominions are stressed, five chapters are given to the United States, and in the 50 chapters of the book the author manages to get in discussions of war debts, banking, the depression, the League of Nations and other world problems. There is something to be said in favor of taking a look at the world through the eyes of another country, considering that most books of this sort for young people are rather monotonously "native."

*Science News Letter, June 9, 1934*

**Chemistry-Physics**

REUNION INTERNATIONALE DE CHIMIE-PHYSIQUE, 1933—IX, CONDUCTIBILITE ELECTRIQUE ET THERMIQUE DES METAUX—Léon Brillouin, 71 p., 18 fr.; X, A POLAROGRAPHIC STUDY OF THE ELECTRO-KINETIC PHENOMENA OF ADSORPTION, ELECTRO-REDUCTION AND OVERPOTENTIAL DISPLAYED AT THE DROPPING MERCURY CATHODE—J. Heyrovsky, 48 p., 12 fr.; XI, PHENOMENES PHOTOELECTROCHIMIQUES ACTION DE LA LUMIERE SUR LE POTENTIEL METAL-SOLUTION — René Audubert, 32 p., 8 fr.; XII, LES COLLOÏDES ET LA COUCHE DE PASSAGE—A. Gillet et N. Andrault de Langeron, 42 p., 10 fr.; XIII, SUR LE POTENTIEL METAL-SOLUTION DANS LES DISSOLVANTS AUTRES QUE L'EAU — Paul Dutoit, 13 p., 4 fr.; XIV, NOUVEAUX RESULTATS EXPERIMENTAUX SUR L'EFFET ELECTRO-THERMIQUE HOMOGENE—Carl Benedicks, 29 p., 8 fr.; XV, DIE THEORIE DER THERMOELEKTRISCHEN EFFEKTE—Lothar Nordheim, 23 p., 6 fr.; XVI, LA NOTION DE CORPUSCULES ET D'ATOMES—Paul Langevin, 47 p., 12 fr., *Hermann et Cie., Paris.*

*Science News Letter, June 9, 1934*

**Industrial Chemistry**

LAQUE D'INDOCHINE RHUS SUCCEDANEA: LA LACCASE ET LA LACCOL—Georges Brooks—*Hermann et Cie., Paris,* 98 p., 18 fr.

*Science News Letter, June 9, 1934*

**Agronomy**

THE TROPICAL SUBSISTENCE HOMESTEAD—John C. Gifford—*Books, Inc., Distributed by Univ. of Miami,* 158 p., 50c. Approaching his theme with something of the attitude of the crusader as well as that of the agronomist, the author advocates for the poor man in warm regions a sufficiency and self-containment on a little land of his own, planted primarily to tree crops.

*Science News Letter, June 9, 1934*

**Chemistry**

LABORATORY MANUAL — William McPherson, William Edwards Henderson and William Lloyd Evans—*Ginn and Co.,* 165 p., $1.20. The manual is arranged to accompany the fourth edition of "A Course in General Chemistry."

*Science News Letter, June 9, 1934*

**Geology**

ELEMENTARY EXERCISES IN TOPOGRAPHIC AND STRUCTURAL GEOLOGY—A. K. Lobeck—*Geographical Press, Columbia University,* 31 illustrated exercises on contour maps, hachure maps, geological maps, and on structural problems. Single copies 35 cents, ten or more copies 25 cents each.

*Science News Letter, June 9, 1934*

**Mathematics**

PROGRESSIVE FIRST ALGEBRA—Walter W. Hart—*D. C. Heath,* 408 p., $1.28.

*Science News Letter, June 9, 1934*

**Mathematics**

PROGRESSIVE SECOND ALGEBRA—Webster Wells and Walter W. Hart—*D. C. Heath,* 298 p., $1.32.

*Science News Letter, June 9, 1934*

**Agriculture-Chemistry**

IIIe CONGRÈS INTERNATIONAL TECHNIQUE ET CHIMIQUE DES INDUSTRIES AGRICOLES, 1934, RAPPORTS ET RÉSUMÉS DES COMMUNICATIONS—*Association des Chimistes de Sucrerie et de Distillerie, Paris.*

*Science News Letter, June 9, 1934*

**Biology**

LA CELLULE ET LES PROTOZOAIRES—Georges Bohn—*Hermann et Cie., Paris,* 121 p., 18 fr.

*Science News Letter, June 9, 1934*

**Medicine**

WHY DIE BEFORE YOUR TIME—*Henry Smith Williams*—McBride, 232 p., $2. The author believes firmly that most people "dig their graves with their teeth," and accordingly advises people in most beguiling style, to eat less if they would live long. He claims that he is not a faddist and that he believes in moderation, but the enthusiasm with which he presents his theories goes beyond the limit of moderation and resembles not a little that of the faddist. The lay reader should take this book with a grain of salt, or better still, with the advice of his own physician. It may be true that many people in middle life eat too much and exercise too little but it does not necessarily follow that the secret of a long life is solely a matter of diet and exercise. Perhaps Dr. Williams does not really think that that is the whole secret, but such is the impression given by his book.

*Science News Letter, June 9, 1934*

**Bio-chemistry**

TRAITÉ DE BIOCOLLOIDOLOGIE—W. Kopaczewski—*Gauthier-Villars (Paris).* Volumes which have been published so far are as follows: Tome I, *Pratique des Colloïdes,* xviii, 786 p., 304 figs., 160 fr.; Tome II, *Biocolloïdes,* xv, 514 p., 67 figs., 80 fr.: Tome III, *Phénomènes Colloïdaux,* viii, 590 p., 150 figs., 110 fr.; Tome IV, *Etat Colloïdal et Biologie,* Fasc. 1, viii, 102 p., 35 fr., Fasc. 2, 133 p., 30 fr. Two more sections to Tome IV, and Tome V entitled *Etat Colloïdal et Médecine* are in press.

*Science News Letter, June 9, 1934*

**Sociology**

THE MEASUREMENT OF SOCIAL STATUS—F. Stuart Chapin—*University of Minnesota Press,* 16 p., 25c. Describing and providing a copy of Dr. Chapin's scale for measuring social status by means of assigning a score to various articles of culture present in the living room.

*Science News Letter, June 9, 1934*

**Natural History**

BULLETIN DU MUSÉE ROYAL D'HISTOIRE NATURELLE DE BELGIQUE, TOME IX—*Brussels.*

*Science News Letter, June 9, 1934*

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